Short-run variations in households' financial market expectations

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2 July 2008

Background

- Many open issues in households' financial market behavior, including
  – stock market participation
  – portfolio choice
- Not much is known about financial market expectations of households
- Previous research (Manski, *Econometrica* 2004) shows that
  – subjective expectations predict behavior in many situations
  – there is substantial heterogeneity in subjective expectations
- Our agenda: probabilistic expectations about financial market outcomes

Specific aims of the project

- Elicit financial market expectations of private households
  – using a probabilistic format
  – at (relatively) high frequencies
- This has been rarely done (Kezdi/Willis; Dominitz/Manski: HRS data)
- Develop a descriptive model of response behavior
- In cross section: Relationship between financial market expectations and stock market participation plus various background variables
- Over time: Changes in expectations and trading behavior

Elicitation of expectations: Dominitz-Manski design

- Original idea by Juster (1966): “What is the percent chance that you will buy a car within the next 12 months?”
- Dominitz and Manski extend the design so that the complete subjective distribution of a variable in the future can be estimated.
- Example: subjective distribution of the future inflation rate:
  – What is the percent chance that the inflation rate will be above 1%?
  – What is the percent chance that the inflation rate will be above 2%?
  – What is the percent chance that the inflation rate will be above 3%?
  ...

Study design

- Interview households at (relatively) high frequencies:
  – expectations about financial market returns and the economy
  – trading of stocks and bonds since last interview
- Trade-off between frequency of interviews and respondent's burden
- Short questionnaires administered in the CentER Panel (representative consumer panel with frequent, self-administered online interviews)
- Rich background information from the DNB Household Survey (DHS) on socio-demographic variables, employment, income, assets, saving, etc.

Study design, cont'd

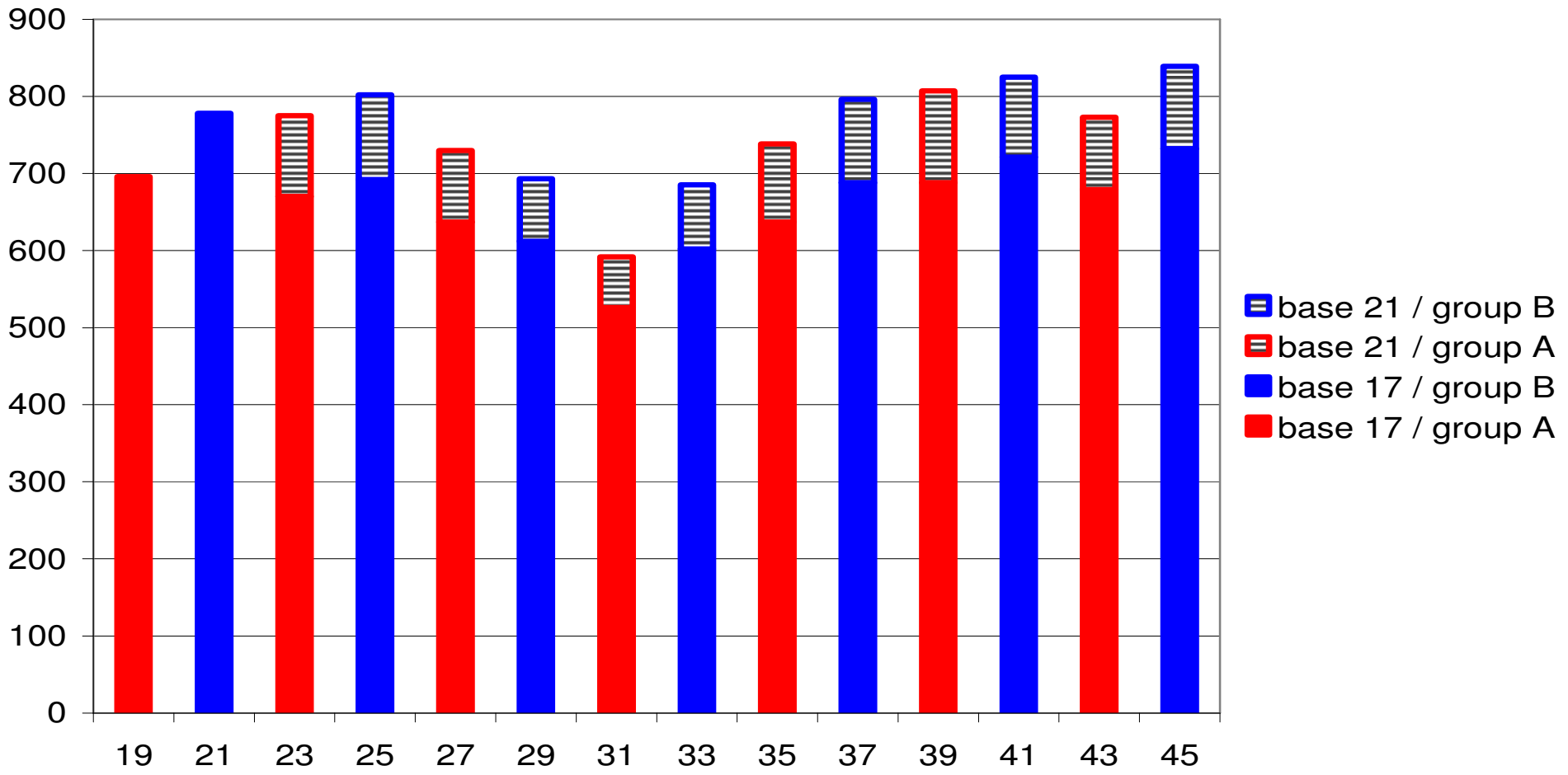
- Field period: April 23 – November 5, 2004 (weeks 17 – 45)
- Baseline interview in week 17, with some extra interviews in week 21
- Random assignment of baseline participants to two groups, A and B
- Follow-up interviews every other weekend, alternating between groups
- In total, we have data from 14 follow-up interviews (bi-weekly)
- For each household we have at most 7 interviews, with some gaps
- One additional follow-up survey in April/May 2006

Sample sizes

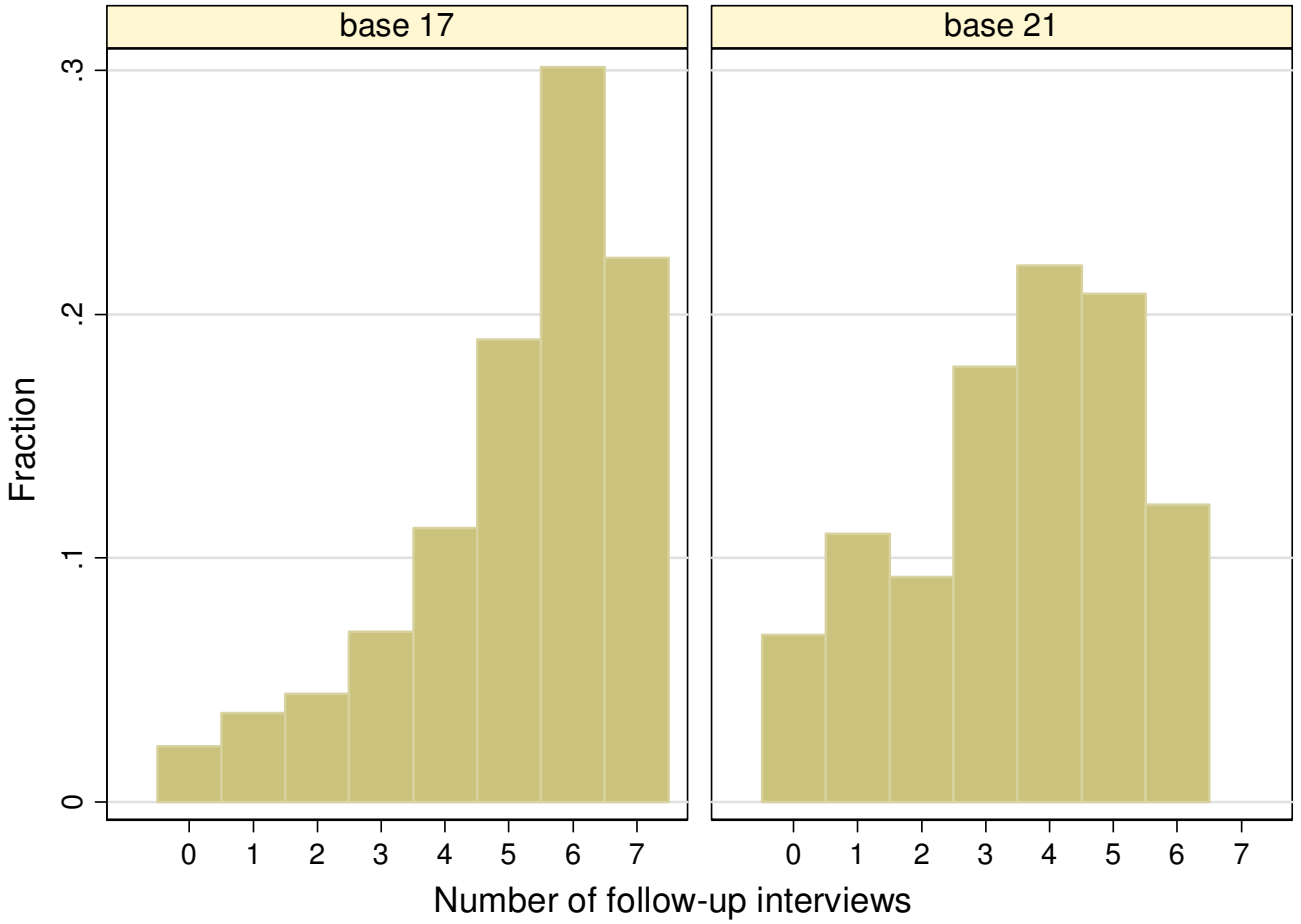
2004	Group A	Group B	Groups A and B	
Baseline in week 17	906	928	1834	85.5%
Baseline in week 21	169	167	336	14.5%
Full sample	1075	1095	2170	100.0%

2006		
Re-interviews of 2004 respondents (69.9%)	1510	71.2%
Refreshment sample	611	28.8%
Interview in week 17	1691	79.7%
Interview in week 21	430	20.3%
Full sample	2121	100.0%

Sample sizes of the follow-up interviews in 2004



Number of follow-up interviews per household in 2004



Questionnaire contents: baseline interview

- Information behavior with respect to financial markets
- Risk attitudes (various measures)
- Subjective expectations (Dominitz-Manski style) for
  - economy overall
  - stock market returns
- Portfolio choice (also matched from DHS background data)
- Recent trading behavior

Questionnaire contents: follow-up interviews

- Subjective expectations (Dominitz-Manski style) for
  - economy overall
  - stock market returns
- Trading behavior since previous interview

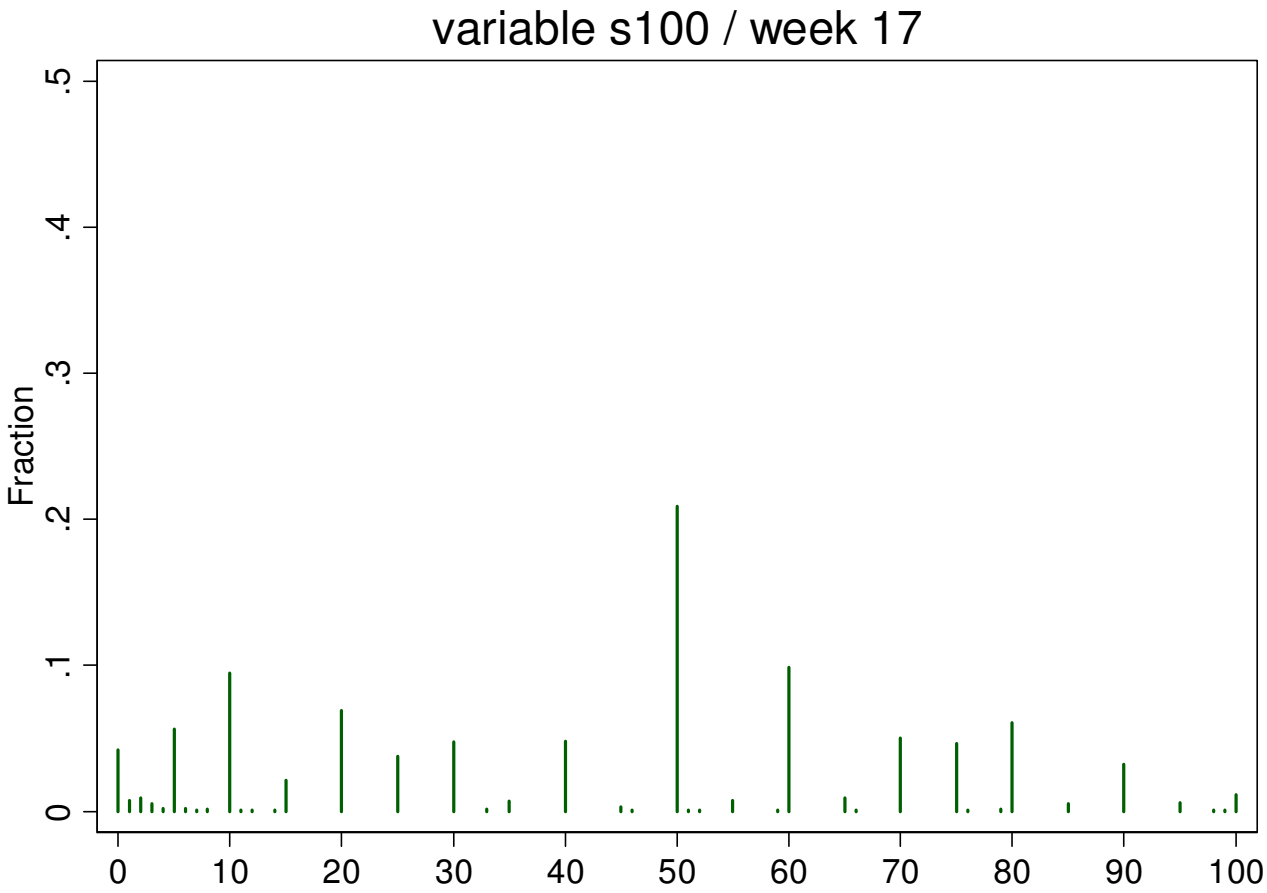
Wording of financial markets expectations questions (1)

- The next few questions are about your expectations about price developments in financial markets. In particular, we would like to know what the chances are that investors will make money or lose money in the stock market if they invest. It is not necessary that you know a lot about stocks or stock markets.
- Imagine that you have a rich relative who unexpectedly leaves you 10,000 Euro. You are thinking of putting the money into a mutual fund invested in “blue chip” stocks (like those in the Amsterdam AEX stock market index, the Eurostocks index or the Dow Jones Industrial Average index).

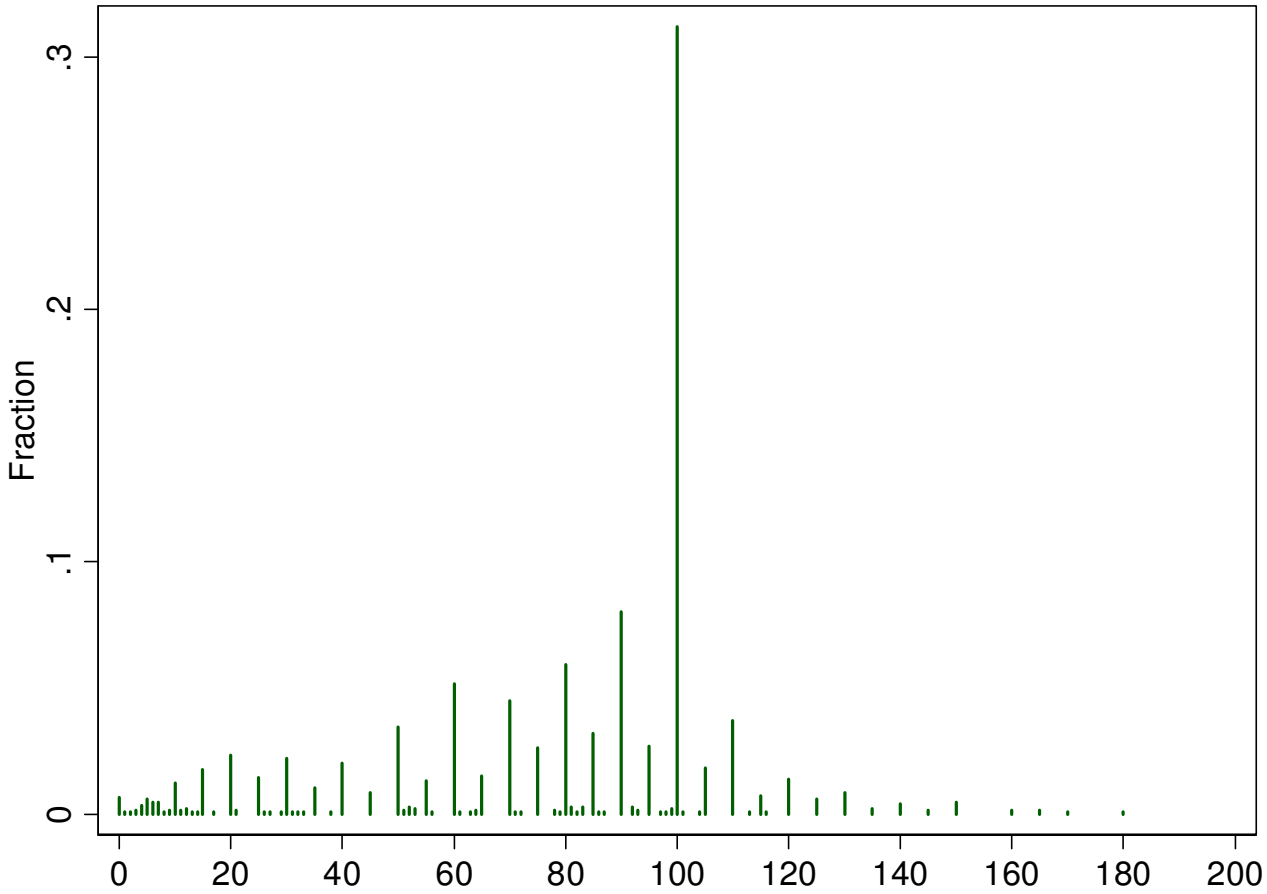
Wording of financial markets expectations questions (2)

- We will first ask you about the chances you would make money. Then we will ask about the chances you would lose money. Your answers can range from zero to one hundred, where zero means there is absolutely no chance you would make money and one hundred means that it is absolutely certain you would make money. [Order manipulation in gain / loss sequence]
- Suppose you put the 10,000 Euro in the stock mutual fund and left it in for one year. What are the chances that you would make money where 0 means absolutely no chance and 100 means absolutely certain; that is what are the chances that in a year your investment would be worth more than 10,000 Euro? [Continues with 11,000 – 12,000 – 13,000 Euro sequence]

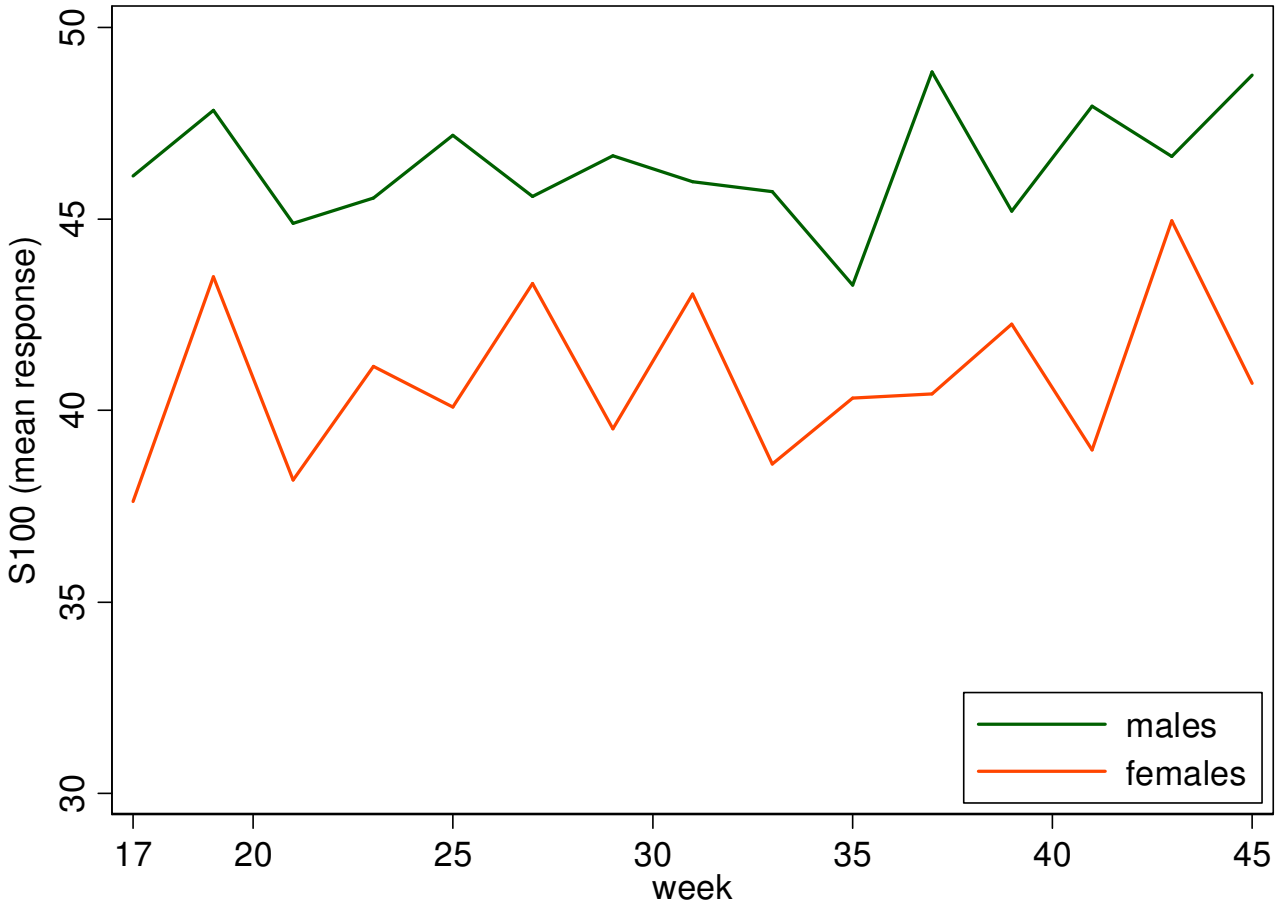
% chance for positive return



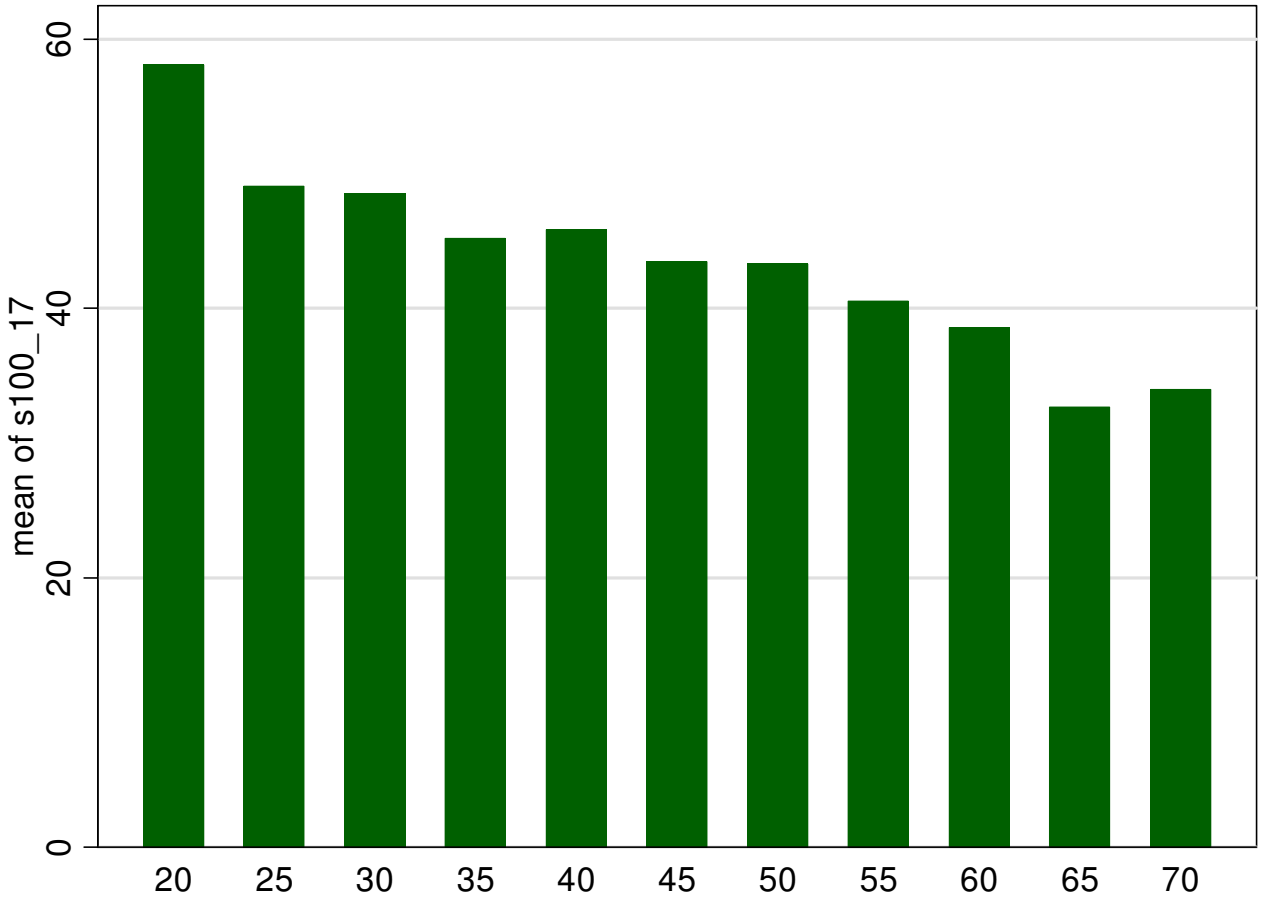
Sum of % chances for positive and negative returns



% chance for positive return – gender



% chance for positive return – age



Ordered probit regression for % chance of positive return

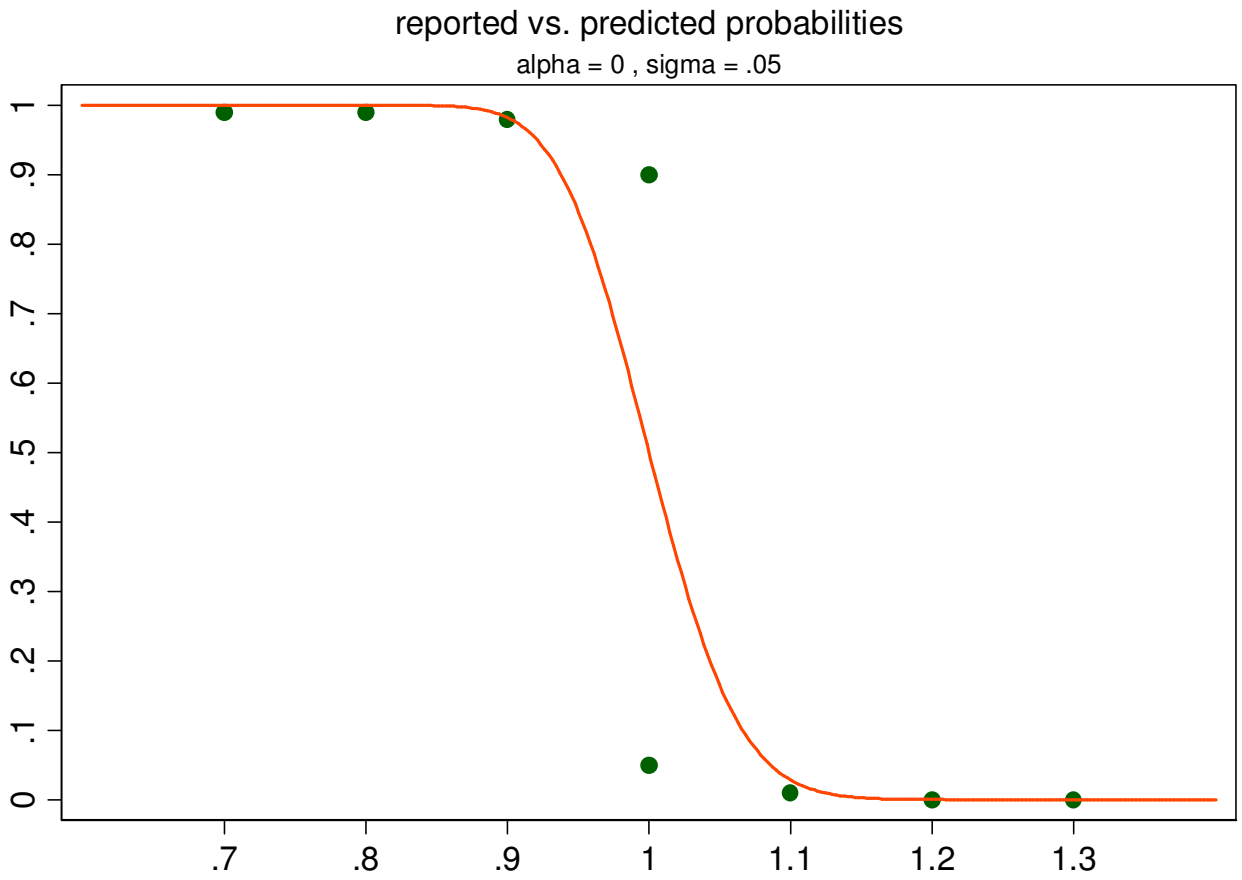
	S100 (2004 base)	S100 (2006)
female	-0.31	-0.162
	[6.35]**	[3.27]**
age: young	0.176	0.061
	[3.25]**	[1.08]
age: old	-0.336	-0.173
	[4.99]**	[2.63]**
educ: low	-0.215	-0.146
	[3.48]**	[2.32]*
educ: high	0.132	0.206
	[2.28]*	[3.50]**
HHinc: 2nd qrt	0.108	0.067
	[1.57]	[0.96]
HHinc: 3nd qrt	0.204	0.134
	[2.95]**	[1.89]
HHinc: 4nd qrt	0.114	0.171
	[1.59]	[2.35]*
3-mon trader	0.424	0.406
	[5.47]**	[5.27]**
Observations	1836	1770

Estimates of individual subjective distributions

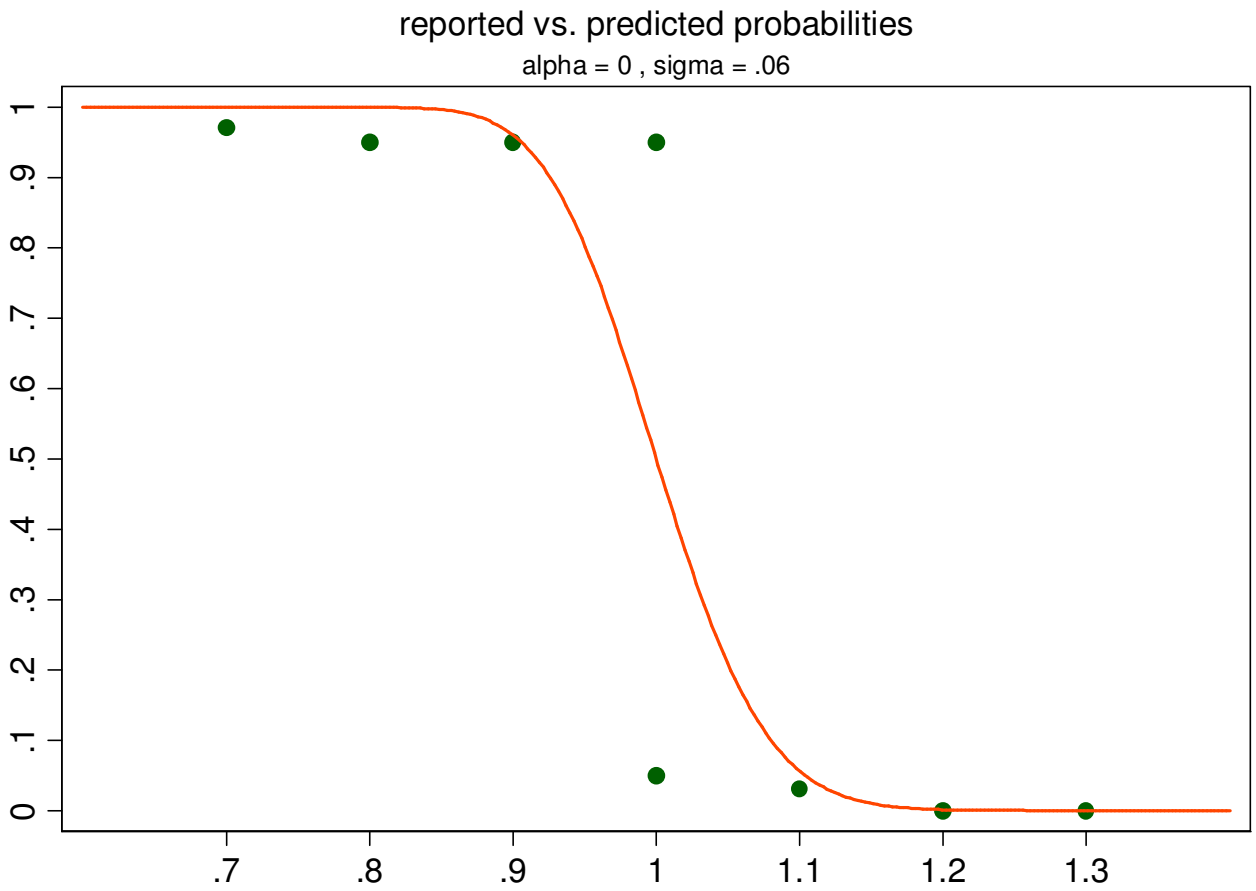
- We have (up to) eight responses per individual:
  - Four in the gain sequence (>0%, >10%, >20%, >30%)
  - Four in the loss sequence (<0%, < -10%, < -20%, < -30%)
- Simple, parametric approach:
  - Fit a normal distribution to those eight points
  - Obtain mean and variance of the subjective distribution of returns

  for each individual
- Practical issue: Responses can be inconsistent with this model in several ways

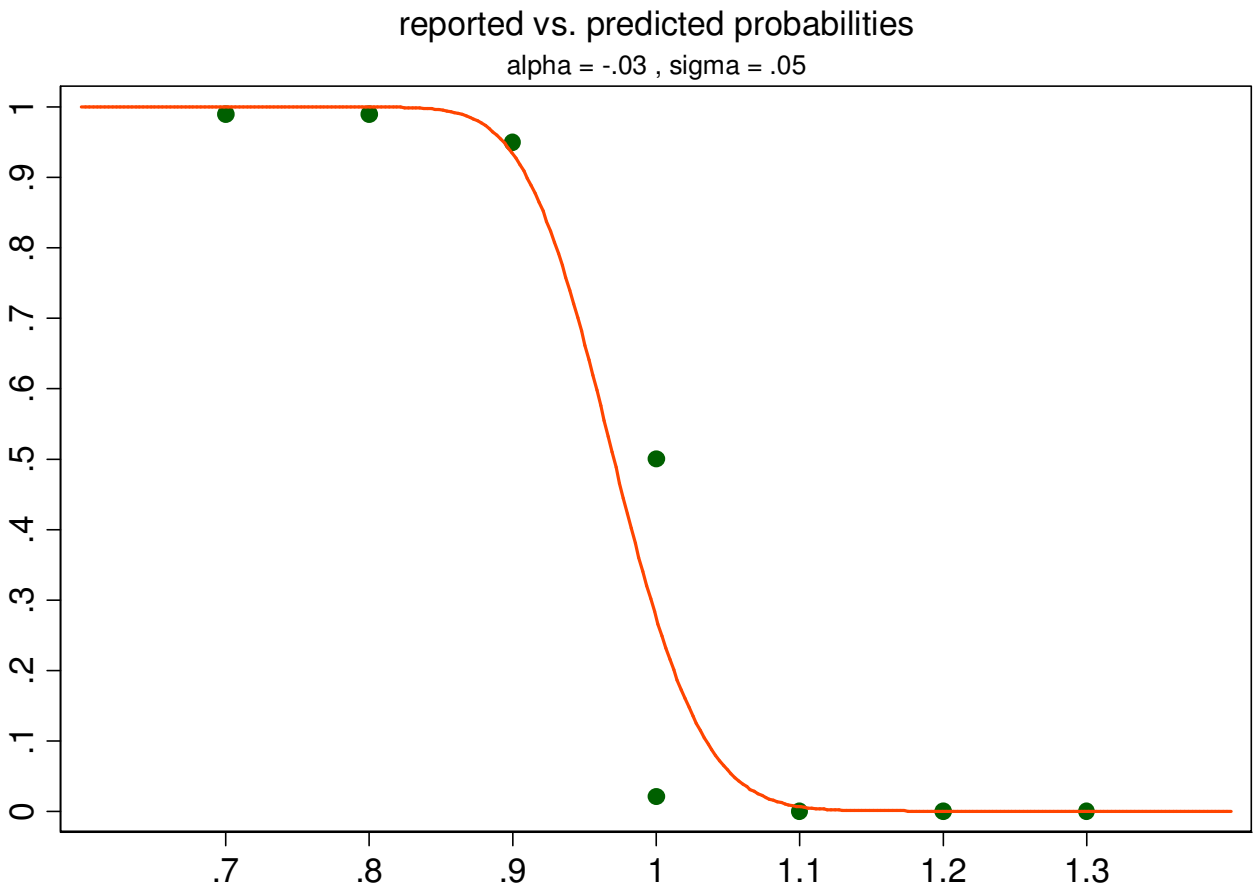
Examples of individual subjective distributions (1)



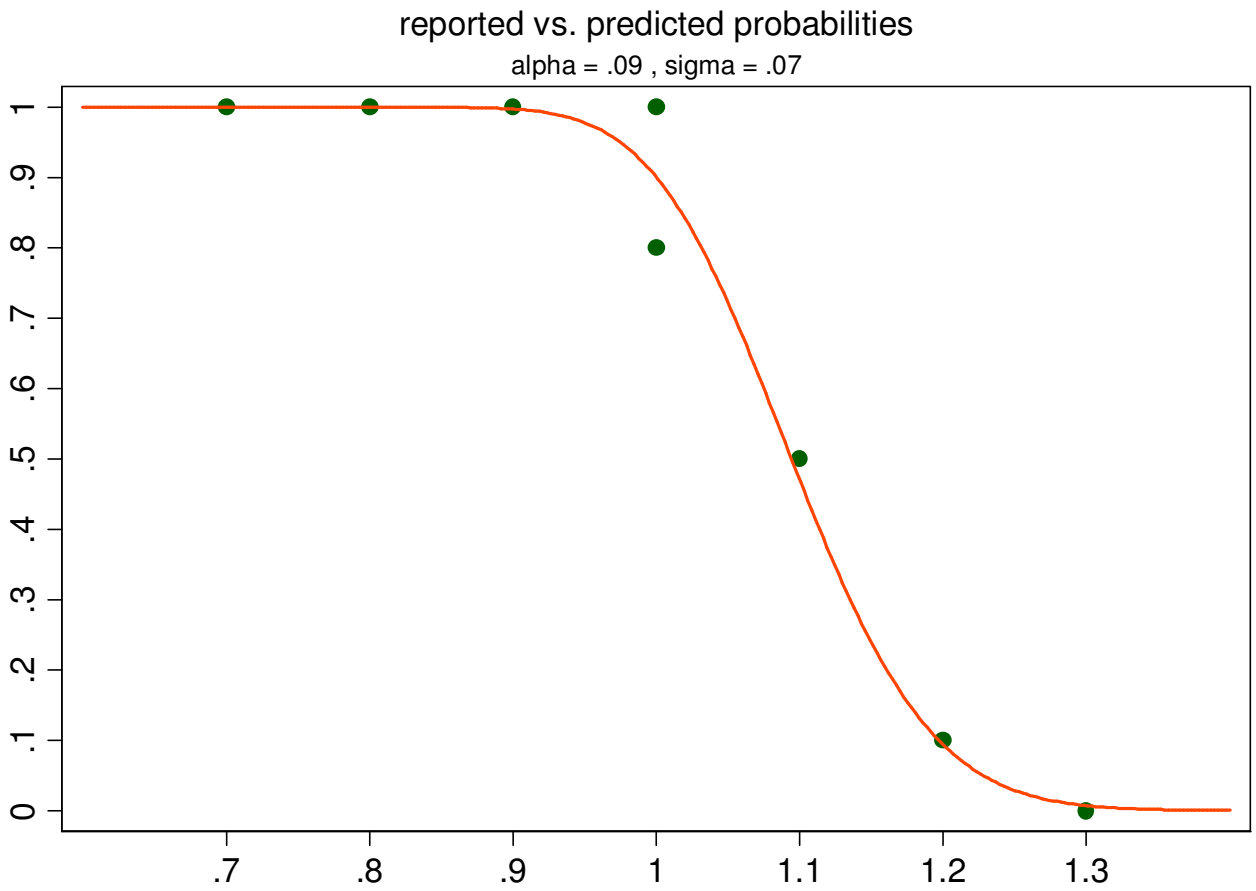
Examples of individual subjective distributions (2)



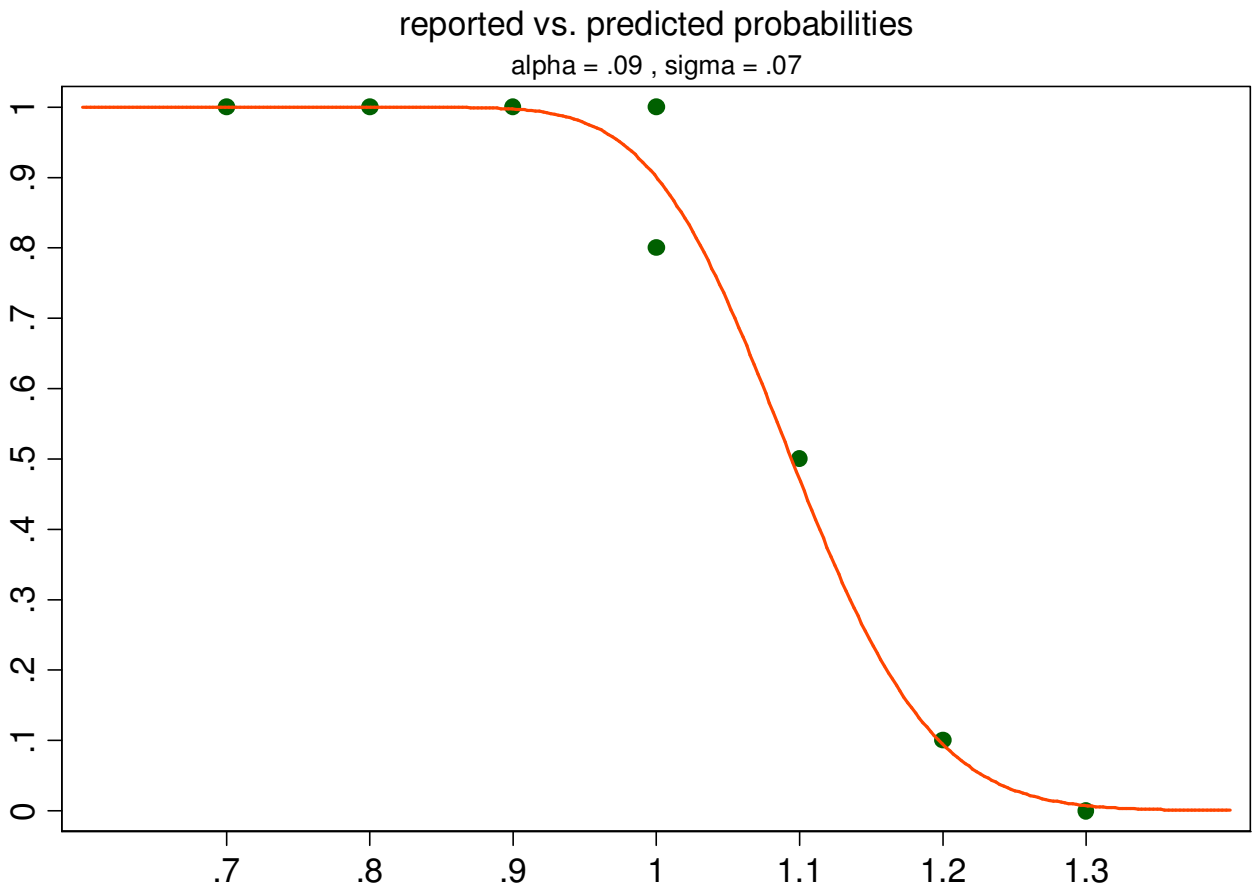
Examples of individual subjective distributions (3)



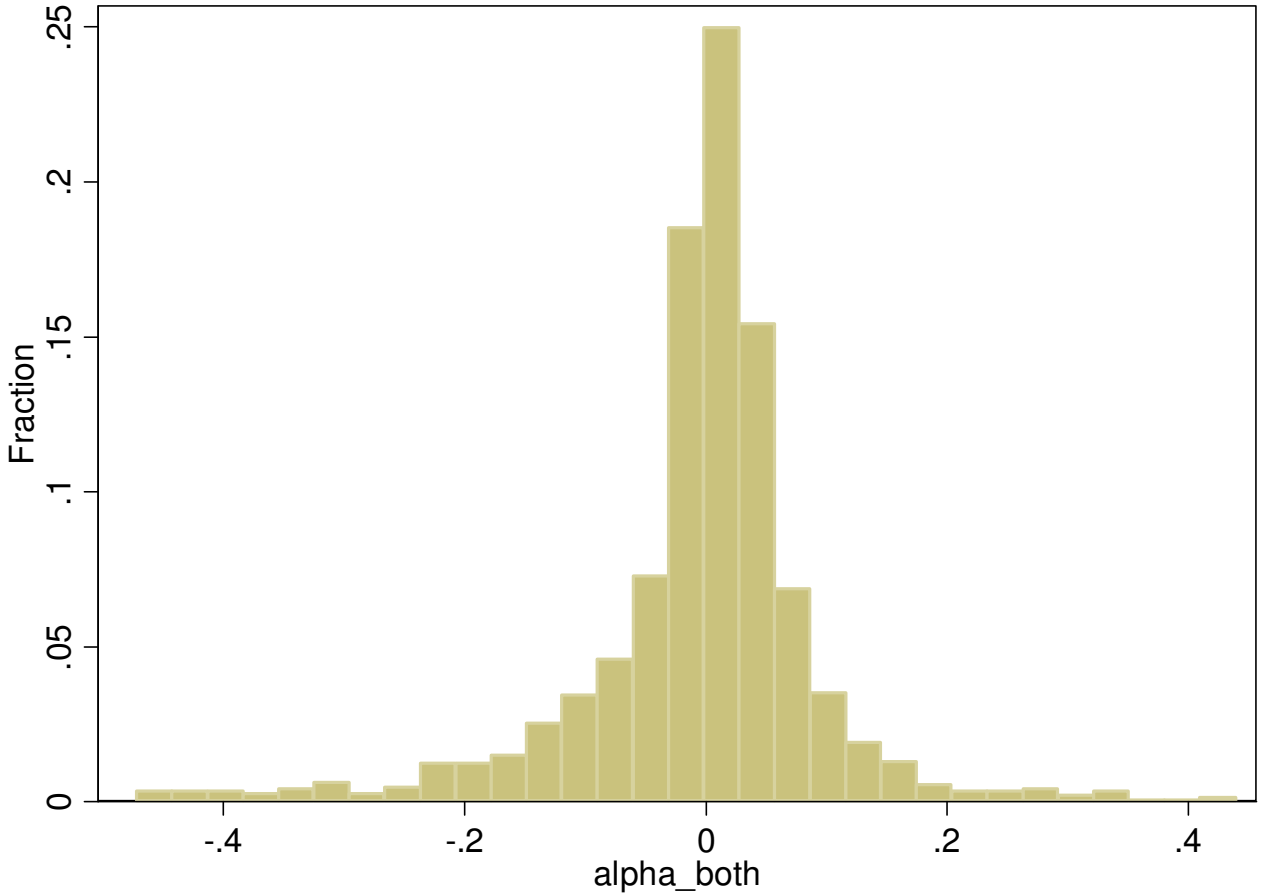
Examples of individual subjective distributions (4)



Examples of individual subjective distributions (4)



Distribution of mean returns



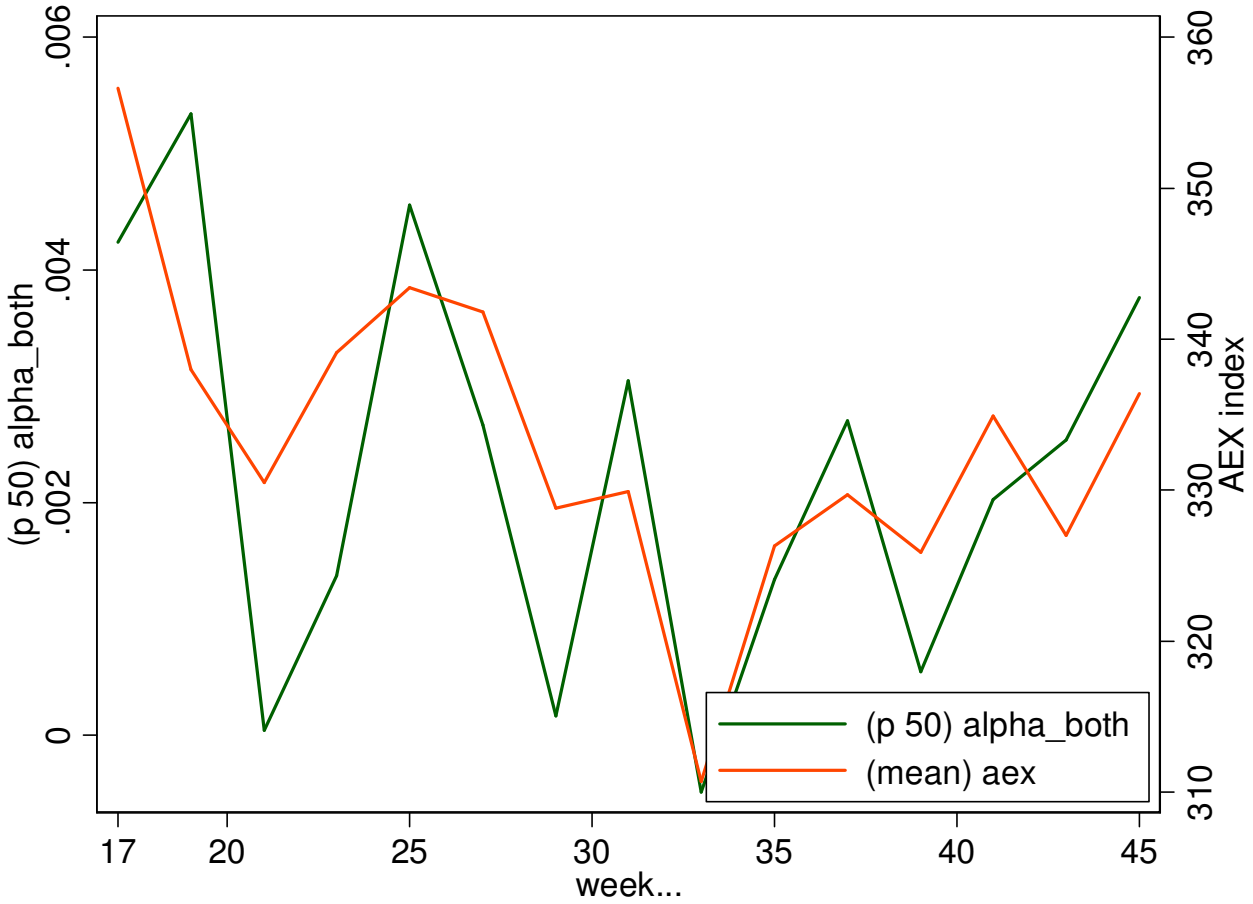
Summary statistics for mean and variance of returns

	alpha		sigma	
	2004 base	2006	2004 base	2006
5th percentile	-0.216	-0.115	0.033	0.037
25th percentile	-0.022	-0.004	0.063	0.062
Median	0.003	0.021	0.106	0.099
75th percentile	0.037	0.058	0.180	0.173
95th percentile	0.109	0.159	0.407	0.414
Observations	1271	1290	1271	1290

Median regression for mean returns

	alpha (2004 base)	alpha (2006)
female	-0.011	-0.016
	[3.83]**	[4.67]**
age: young	0.004	-0.001
	[1.31]	[0.30]
age: old	-0.005	-0.001
	[1.25]	[0.18]
educ: low	0.005	0.002
	[1.31]	[0.39]
educ: high	0.005	0.006
	[1.44]	[1.61]
HHinc: 2nd qrt	0.006	0.006
	[1.60]	[1.26]
HHinc: 3nd qrt	0.008	0.007
	[1.94]	[1.36]
HHinc: 4nd qrt	0.006	0.01
	[1.59]	[2.09]*
3-mon trader	0.017	0.015
	[4.16]**	[3.09]**
Observations	1271	1290

Mean returns and the AEX stock market index over time



Summary

- Response patterns:
  - low rates of nonresponse
  - some rounding and 50% focal responses
- Much heterogeneity (gender, age, income), in line with the literature
- Some interesting correlations with financial market behavior
- Those who participate in the stock market tend to have more optimistic expectations
- We do not offer a causal interpretation

Current and future work

- Current work focuses on
  - heterogeneity with respect to expectations formation and updating
  - revisions of expectations and trading
- Develop an econometric framework for the analysis of causality between expectations and stock market participation
- Main obstacle: small number of trades observed between interviews
- Technical issue: response patterns over time (gaps)